

Docket No. 2000-046CON2  
PATENTREMARKS

Claims 1-31 are now pending in the above-referenced patent application. Applicants respectfully request further consideration of these claims, in view of the amendments set forth above and the following remarks.

Amendments to the Specification

The specification has been amended to update the status of the parent application. No new matter has been added.

Amended Claims

Claims 1, 8, 31 and 32 have each been amended, without narrowing the substantive scope thereof, to clarify that the temperature sensor is not required to be *in thermal communication* with the candidate catalysts (claims 1, 31 and 32) or to be *located in the vicinity of* the candidate catalysts (claim 8). Rather, as presently amended, the invention requires that the one or more temperature sensors are *adapted to measure temperature* of the plurality of candidate catalysts (claims 1 and 32) or are *adapted to observe temperature change* in the vicinity of the candidate catalysts (claim 8). Support for these amendments can be found throughout the specification, including particularly for example at page 5, line 24 through page 6, line 2, considered together with page 3, lines 1-9.

Claim 1 has also been amended to include the requirements of claim 2, without change in the substantive scope of claim 2 as previously pending.

Claim 2 has been amended to now depend from claims 3, 14-17, 21 and 30 (rather than claim 1).

Claims 3, 14-17, 21 and 30 have each been rewritten in independent form, without narrowing the substantive scope thereof. In particular, each of these claims have been amended to include the requirements of claim 1 (from which they previously depended), with the same change to the temperature sensor requirements as described above in connection with the amendment to claim 1.

Claims 4-8 have each been amended, without change in the substantive scope thereof, to now depend from claim 1 (rather than claim 2).

No new matter has been added.

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Claim 32 has been canceled, without prejudice.

Acknowledgement

Applicants acknowledge that the Office action does not set forth any prior-art-based rejections of previously-pending claims 2-8, 14-17, 21, 26 and 30. Accordingly, Applicants respectfully submit that – subject to reconsideration of the outstanding rejections under 35 U.S.C. § 112, 1<sup>st</sup> paragraph (written description) in view of the above amendments and the following remarks – each of presently pending independent claims 1 (now including the requirements of previously-pending claim 2), 3, 14, 15, 16, 17, 21 and 30, as well as claims depending therefrom, are in condition for allowance.

Rejection Under 35 U.S.C. § 112 (Written Description)

The Office action rejects each of claims 1-32 under 35 U.S.C. § 112 as containing subject matter not adequately described in the specification. (See paragraph 3 at page 2 of the Office action).

This basis for rejection is obviated in view of the aforementioned amendments to claims 1, 8, 31 and 32.

Rejections Under 35 U.S.C. § 103(a) (Jensen, Carlson, Kulkova, Schodel and Temkin)

The Office action rejects claims 1, 9-13, 18-20, 22-25, 27-29, 31 and 32 under 35 U.S.C. § 103(a) as being obvious over Jensen in view Carlson, Kulkova, Schodel or Temkin. (See paragraph 5 at page 3-5 of the Office action).

This basis for rejection is obviated with respect to claims 1, 9-13, 18-20, 22-25 and 27-29, in view of the aforementioned amendment to independent claim 1 (from which each of claims 9-13, 18-20, 22-25, 27-29 depend, either directly or indirectly).

This basis for rejection is moot with respect to claim 32, now canceled.

Applicant respectfully traverses this basis of rejection with respect to claim 31 in view of the following remarks.

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The Office action does not set for a *prima facie* case of obviousness, because the prior art would not have motivated a person of ordinary skill to modify the method of Jensen *et al.* in a manner that would have led to Applicant's invention.

Contrary to the assertion in the Office action, the primary reference relied up, does not disclose, teach or suggest *simultaneous evaluation* of several catalysts. The Jensen reference discloses a deactivation reactor in which known catalytic materials are provided in separate baskets and simultaneously deactivated by treatment with exhaust gas from an internal combustion engine. The deactivation reaction is not a catalytic reaction. Catalytic activity of the deactivated materials is then *subsequently* evaluated in a separate reactor using *conventional, serial* approaches. For example, in this regard Jensen *et al.* expressly state that:

(t)he reactor is used only for purposes of deactivation under well-defined conditions of temperature and concentration. Fundamental kinetic parameters on both fresh and spend catalysts are determined by measurements in a conventional recirculation reactor.

See, Jensen *et al.* at page 796, last paragraph (emphasis added). Hence Jensen, does not disclose a *parallel flow reactor* in which a plurality of different catalyst are *simultaneously contacted with reactants under reactant conditions*.

The secondary references do not make up for the deficiencies of Jensen *et al.*

In particular, Carlson is directed towards the use of a differential thermal analysis instrument for measuring low-temperature activity of auto exhaust. A skilled artisan would not have been motivated to adapt these methods to modify Jensen *et al.* or the other art of record for several reasons. First, as noted above, Jensen expressly teaches evaluation of the catalysts by kinetic analysis (using a conventional reactor). However, Carlson expressly teaches that the disclosed methodology is not applicable to quantify kinetic parameters. In particular, it is stated that:

(i)t is not our intention to develop a sophisticated microreactor system from a DTA apparatus and explain catalytic parameters from measures of the heat evolution. Rather, we feel that the degree of sophistication and complexity necessary to get accurate reliable data are such that microreactors measuring the composition of the reacting streams are more direct and more meaningful. ... We make no effort to quantify kinetic parameters.

See Carlson *et al.* at page 467, last paragraph of "Introduction" section. (emphasis added). A person of ordinary skill in the art would have understood Jensen as teaching the need for a detailed analysis that quantifies for kinetic parameters, and would have understood Carlson as

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expressly teaching that its device does not provide such capability. The Office action does not adequately explain *why* a person of ordinary skill would have nonetheless combined these references in a manner that would have led to the invention defined by claim 31. Second, the methodology of Carlson is disclosed only in connection with a discrete particular problem – that is, the comparative analysis of catalytic activity against a known standard for low temperature oxidation of a model auto exhaust gas feed. There is no teaching or suggestion in Carlson that such apparatus could be useful as a *generally universal* screening device for evaluating arrays of diverse candidate catalysts for a diverse set of reactions under a diverse set of reaction conditions. Further, the problems encountered by Carlson *et al.* – for example, finding a thermocouple that was itself not catalytic – would have further led a person of skill in the art away from applying such analytical device as a general screening reactor.

Kulkova *et al.* indeed teaches the use of thermocouples, but only for temperature control. Kulkova expressly teaches a gas chromatographic analysis system. There is no teaching *in the art* that would have led a person of ordinary skill to modify Kulkova to use the thermographic analytical approach rather than the chromatographic approach expressly taught. In fact, the *art teaches away* from such substitution. See, especially the Carlson *et al.* passage cited above indicating that the approaches like that of Kulkova would be “more direct and more meaningful.”

Schodel *et al.* similarly teaches temperature control and monitoring systems associated with flow reactors, and expressly teaches analysis by injection of the effluent into an analytical system. As with Kulkova *et al.*, this art, alone or in combination, would not have led a person of ordinary skill to modify Schodel to use the thermographic analytical approach rather than the analytical approach expressly taught in the reference.

Temkin offers no further teaching beyond that of Kulkova *et al.* or Schodel *et al.*, noting only that the walls of small diameter tubes are equipped with thermocouples. It does not disclose, teach or suggest the use of such thermocouple-equipped reactor tubes in the manner defined by claim 31.

The Office action asserts, as its basis for motivation, that it would have been obvious “because it would have allowed each sample to be simultaneously monitored during the catalyst evaluation”. (See paragraph 5 at page 5 of the Office action). However, this position appears to be based entirely on impermissible hindsight. The mere fact that such techniques were known in the art does not, by itself, provide the requisite motivation for applying such techniques in the

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manner claimed by Applicants. That is, the rationale of the Office action is too general, and does not explain why a skilled artisan would have selected the particularly claimed screening technique from among other options. Obviousness cannot be established based merely on the fact that the reference could have been combined or modified, unless the prior art also suggests the desirability of the combination. In re Mills, 16 USPQ2d 1430 (Fed. Cir. 1990).

Without impermissible hindsight analysis, there is no basis for the Office action position that the invention defined by claim 31 would have been obvious to a person skilled in the art.

Accordingly, since the Office action has not established the invention defined by claim 31 is patentable over the art of record.

Obviousness-Type Double Patenting Rejections

Claims 1-32 have been rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-35 of U.S. Patent No. 6,333,196.

Applicants are submitting a terminal disclaimer herewith to obviate this rejection.

Equivalents

The amendments to the claims and the arguments presented in supplemental response to the Office action have been made to claim subject matter which the Applicants regard as their invention. By such amendments, the Applicants in no way intend to surrender any range of equivalents beyond that which is needed to patentably distinguish the claimed invention as a whole over the prior art. Applicants expressly reserve patent coverage to all such equivalents that may fall in the range between applicants literal claim recitations and those combinations that would have been obvious in view of the prior art. In particular, as noted above, many of the claims (e.g., claims 3-8, 14-17, 21 and 30-32 have not been narrowed within the meaning of *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 62 USPQ2d 1705 (2002), and Applicants are therefore entitled to the full range of equivalents with respect to each of the presently-pending claims.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

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The Examiner is hereby authorized to charge the fees required in connection with this Amendment C to Deposit Account No. 50-0496, in accordance with the Transmittal submitted herewith. The Examiner is also authorized to debit any other fees required in connection with this application, or to credit any overpayment of fees in connection with this application to Deposit Account No. 50-0496.

Respectfully submitted,



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